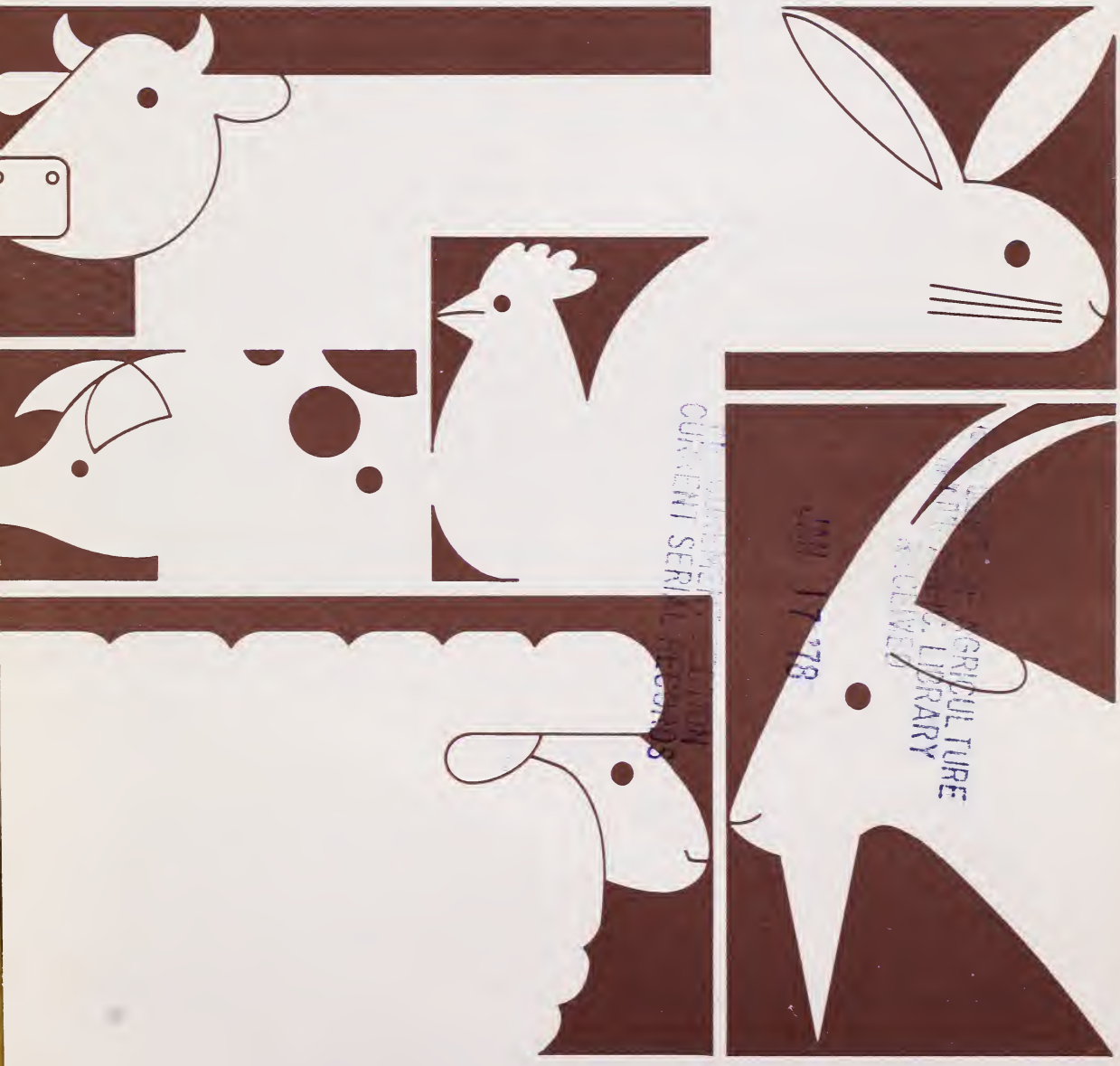
S

Raising Livestock on Small Farms



UNITED STATES DEPARTMENT OF AGRICULTURE

FARMERS' BULLETIN NUMBER 2224

PREPARED BY AGRICULTURAL RESEARCH SERVICE

CONTENTS

Revised June 1972
Washington, D.C. Slightly revised October 1977

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402

Stock Number 001-000-01617-2

RAISING LIVESTOCK ON SMALL FARMS

Families engaged in small-scale or part-time farming usually want to raise some livestock for food or for added income.

Before you decide what livestock you are going to raise, get the facts on the initial cost of the various kinds of animals—how much it will cost to feed and house them, how much time and labor they will require, and what equipment and fencing will be needed. Consult your county agricultural agent and competent farmers in your neighborhood. This is particularly desirable if you and your family are inexperienced in handling livestock.

If you want livestock to provide income, you will need to find out what projects have proved profitable in your area and whether there is a market for your products at satisfactory prices.

Look over the buildings, fences, and equipment on your place and consider what kind of livestock is best suited to them. If you can use existing facilities, it will save additional investment.

Decide whether you are going to grow some of your livestock feed or buy all of it. Find out if some can be bought from other farmers or if you will have to buy all of it from a feed store.

Growing your own hay or grain will cut feeding costs considerably, but bear in mind that unless you already own the necessary farm machinery you will have to buy it or hire someone to do the farm work. It may be possible to buy some good secondhand machinery. Sometimes the cost and use of machinery can be shared with neighbors.

If family members will do the chores, little or no hired help may be necessary. Remember, though, that livestock must be fed, watered, and cared for every day of the year. This restricts family activities to some extent and should be understood at the start.

This bulletin presents general information on livestock suitable for a small farm. For more detailed information, a list of publications is included (p. 22).

CHICKENS

Most small farms can provide facilities for a flock of chickens. Some suburban areas, however, have restrictions on the keeping of poultry. Before you start raising poultry, investigate your local ordinances.

Starting a Small Flock

Several breeds and crosses of chickens are suitable for small farm flocks. If egg production is the chief aim, egg production stocks, such as White Leghorn strain crosses, are recommended for white eggs. There are also some good brown egg stocks which are good layers. Consult a local hatcheryman or your county agricultural agent for information on sources of good stock.

One way to start a flock is to buy day-old chicks. Very young

chicks require a lot of care, however, and must be kept in a heated brooder house.

Or you may prefer to buy older chickens—ready-to-lay pullets, or hens that have completed 1 year of production. Pullets may be obtained from a commercial pullet raiser, and yearling hens from a commercial egg producer. Yearling hens are normally removed from commercial flocks after 12 to 15 months of lay and replaced with pullets.

Buy only from reputable hatcheries or breeders, and be sure the chickens have been tested for and are free from pullorum and typhoid diseases.

Most commercial hatcheries now have chicks separated by sex, so you can choose mostly pullets for egg production or include cockerels that will be used for meat.

Feeding Practices

Feeding baby chicks

When you bring newly-hatched chicks home, put them in the brooder house. Immediately provide chicks with a starting mash in chick feeders, and plenty of water in drinking fountains.

Following this, mash is usually fed as the entire diet until the chicks are 4 to 6 weeks old, except for some fine grit that can be mixed with the mash or fed separately. Allow 1 inch of space at feeders and one-half inch at drinking fountains for each bird. As the chicks grow, feeding and drinking space must be increased. Keep mash and water available at all times.

Feeding older chicks

When chicks are 6 to 8 weeks old, replace starting mash with an all-mash growing diet or a combination of growing mash and grain. Start by adding small amounts of grain and increase gradually until the birds are getting equal parts of mash and grain at about 15 weeks of age. Grit must be fed when the diet contains whole grain.

Grains fed to poultry include corn, wheat, oats, and barley, Most poultrymen now use commercially prepared feeds. Quality is carefully controlled. Follow manufacturer's directions exactly in feeding these formulas.

If you want to mix your own feed from homegrown grains, get feed formulas and directions for mixing from your county agent or State extension office. These formulas have been tested, so follow directions carefully, especially in adding minute quantities of vitamins and other additives to large batches of feed. Be sure that these additives are stirred into the feed sufficiently to distribute them evenly throughout.

If space is available and weather is favorable, chicks can be put on range by the time they are 6 weeks old. Range gives them exercise and sunshine.

Egg-production breeds, such as White Leghorns, usually start to lay at 20 to 24 weeks of age; general-purpose birds, such as Rhode Island Reds, at 22 to 26 weeks. About 2 weeks before pullets are expected to start laying, gradually replace growing mash with an all-mash laying diet or laying mash with grain.

Feeding layers

For maximum egg production, laying mash or laying mash and grain should make up the major part of the diet of laying hens. If grain is fed, add grit and oystershell to supply the necessary calcium for normal eggshells. If mash alone is fed, check the man-

32995-B, 18833-B, 18832-B

FIGURE 1.—Cull hens in your flock that are not producing and use them for meat. You can separate layers from nonlayers by looking for the egg-laying indicators—changes in the appearance, size, or shape of the comb and wattles, pubic bones, and vent. A layer (top left) has large, smooth comb and wattles. A nonlayer (top right) has dry, shriveled comb and wattles. Pubic bones on a layer (lower left) are wide apart; pubic bones on a nonlayer (lower right) are close together. A yellow vent shows that a hen is not laying, and a white, pink, or bluish-white vent indicates that a hen is laying.

ufacturer's directions to see whether limestone or oystershell should be added.

Feed is the big expense in egg production. Laying hens of light breeds eat an average of 85 to 90 pounds of feed a year; heavier, all-purpose hens eat 95 to 115 pounds.

The average annual egg production of production-bred hens will be 200 to 240 eggs per hen.

Houses and Equipment

Day-old chicks require a well-built, draft-free brooder house that allows at least 1½ square feet of floor space for every two chicks. They will need a brooder stove heated by coal, oil, gas, or electricity. Electric brooders are satisfactory and are less of a fire risk than other brooders. Some poultrymen use homemade brooders successfully. The expense and care necessary for day-old chicks can be avoided by purchasing older birds.

Older birds may be raised in any building that keeps them dry and protected from the cold, provides ample ventilation in hot weather, and permits easy tending of the flock. Such a building can be inexpensive. You may be able to use or remodel an existing farm structure. Allow 3 to 4

76354-B

FIGURE 2.—Chickenhouse suitable for a small flock. Setting the house on blocks helps prevent dampness and reduces parasites. Other designs of chickenhouses are available from your county agricultural agent.

square feet of floor space per bird.

If roosts are used they should be put at the back of the house, away from drafts. Roosts should be 2 to 3 feet above the floor and 10 to 12 inches apart.

Make a pit under the roosts to catch droppings and to help keep the litter clean. Cover pits with heavy wire netting to keep chickens out of them. Removable droppings boards can also be used. Clean droppings pits and boards often enough to prevent offensive odors.

Cover the floor with 6 to 8 inches of absorbent litter for the chickens to scratch in. Renew litter when it gets damp. Damp litter harbors disease organisms and parasites. Always clean and disinfect quarters and provide fresh litter before housing new birds.

Chickens can be confined to houses at all times, or a yard or range may be provided for them. Growing birds, in particular, benefit from exercise, sunshine, and fresh air.

Confinement of the flock usually requires less money for land and equipment, and less labor. Losses to predatory birds and animals are also decreased.

A house for laying hens should should provide a nest for every four or five hens in a convenient location. Build sectional nests along the wall in such a way that hens can enter from the rear and eggs can be removed from a door at the front.

Many poultrymen keep laying hens confined to the house at all times and get excellent production. Artificial lights may be used in the laying house during the fall and winter. This lengthening of the hen's "day" stimulates egg production.

Crowding causes smothering in baby chicks. It reduces the egg production of hens and increases the possibility of disease.

Always keep chicks separated from older birds; this helps protect them from disease.

Poultry Health

Get off to a good start by buying chickens from a reputable hatchery or breeder known to have a good disease-control program. If you keep them in a roomy, clean, well-ventilated house, many of the diseases and parasites common to young birds will be avoided.

Watch your flock for signs of disease, and act promptly if they occur. Signs may include: coughing, sneezing, difficulty in breathing, watery eyes, a sudden drop in feed consumption, droopiness, and abnormal droppings.

When disease is suspected, isolate sick birds immediately from the rest of the flock. Get a reliable diagnosis and start treatment at once. Kill very sick birds, and burn or bury deeply the remains to prevent spreading the disease.

Clean all feeders and waterers regularly. Remove droppings frequently, and keep clean litter on the floor. Thoroughly clean and disinfect the entire building and least once a year, and after any sick birds have been held there.

Producing High-Quality Eggs

If you have fed and cared for your laying hens carefully, you should get high-quality eggs for your family or for the market.

Gather eggs from the nests twice daily, and clean and cool them. Eggs should be held at a temperature between 45° and 55° F.

If you are going to sell eggs, do not include undersized or thin-shelled eggs, because size and shell quality affect price.

For additional or more specific information on raising chickens, consult your county agricultural agent or write to your State agricultural college or the U.S. Department of Agriculture, Washington, D.C. 20250.

TURKEYS

Turkeys can be raised satisfactorily on small farms, but they do require special care and equipment. Young turkeys must be kept warm and dry.

Turkeys should not be allowed to run with chickens, and young turkeys should not be kept with older ones. Turkeys should not be put in buildings that have housed chickens within the past 3 months. Land used for chickens or other turkeys should not be used as range for another flock until at least 3 years have passed. These precautions are necessary to keep turkeys from contracting blackhead and other serious diseases.

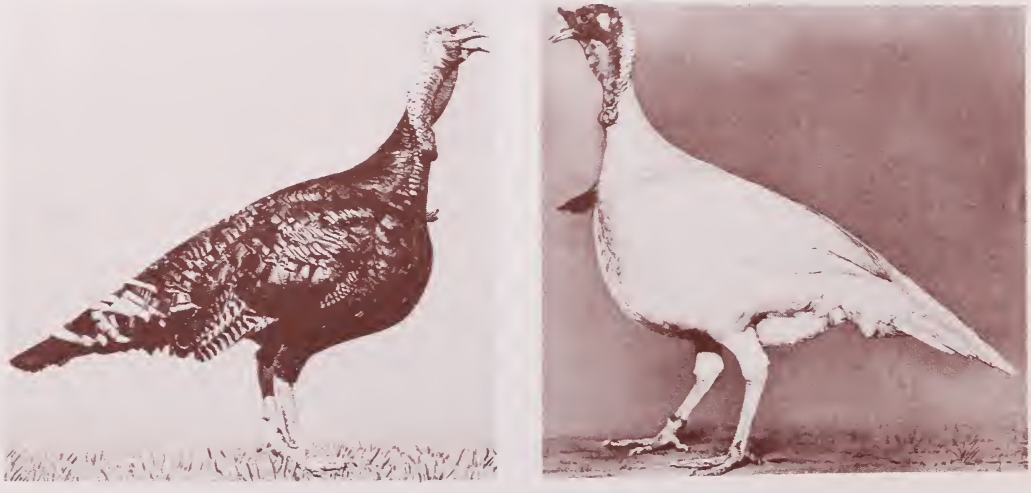
Turkeys are usually marketed as mature roasters or as fryer-roasters, sometimes called broilers. Small-type mature roasting turkeys of both sexes are ready for market at 22 to 24 weeks of age; large-type at 24 to 28 weeks. Large-type hens, however, often are marketed at 20 weeks.

Small-type white turkeys make excellent fryer-roasters when marketed at about 16 weeks. Large-type white females, marketed at 13 weeks, make satisfactory fryer-roasters.

Buy about 100 day-old turkey poults from breeding flocks tested for and free from pullorum-typhoid, typhimurium, and sinusitis. Feed and water birds as soon as possible after getting them home.

Feeding Practices

For the first 8 weeks, poults need a starting mash containing 28 percent of protein. After this, they should be fed a growing mash, loose or pelleted, contain-



76255-B, 76252-B

FIGURE 3.—Left, Bronze tom turkey, heavy-weight breed used for mature roasters. Toms are marketed at 24 to 28 weeks of age at weights of 24 to 28 pounds live weight. Right, Beltsville small white tom, an early-maturing breed marketed at 14 to 16 weeks of age as a fryer-roaster. Toms and hens mature at same age.

ing 20 to 22 percent of protein, along with grain—both free choice.

You may use either commercial feeds or home-mixed feeds based on formulas recommended by State agricultural colleges or the U.S. Department of Agriculture.

Any common grain or combination of grains may be used with the growing mash. If corn is fed, it should be cracked until the birds are 16 weeks old. If confined turkeys are not fed supplementary green feed, give them a well-balanced growing mash. A less expensive mash without vitamin supplements may be used when green feed and direct sunshine are freely available.

Houses and Equipment

Poults require a well-built, artificially heated brooder house until they are 8 weeks old. Allow 1 to 1½ square feet of floor space per bird.

Use sand for litter the first 2 weeks, then add wheat straw or splinter-free shavings. Litter is not needed if the birds are started on a floor with narrow slats three-fourths of an inch apart, or on a floor covered with No. 2½ hardware cloth nailed to removable frames.

Older poults and adult turkeys are best kept in confinement in a well-ventilated building with a dry floor and tight roof. All openings should be screened with heavy wire to exclude small birds and predators. Litter the floor liberally with straw, hay, or splinter free shavings. Add to the litter as required for sanitation. Floor space required by poults to market age and beyond is about 5 square feet per bird if the turkeys are debeaked; 7 to 8 if not.

Range rearing is practicable if you have facilities for moving turkeys and equipment to clean ground every 2 to 4 weeks during the growing season. If weather is mild, you can start poults on range when they are about 8 weeks old. If weather is severe and range shelter is not available, wait until poults are 10 to 12 weeks old to put them on range.

14073-A

FIGURE 4.—A permanent-type turkey shelter with cobblestone yard attached. This 15- by 20-foot building will house 125 turkeys to market age.

The range may be a grass or legume pasture, and should be well drained and fenced. Roosts and shade should be available. Some kind of portable range shelter on skids generally is needed. Wire walls on the shelter should be strong and close enough to keep out predatory animals—dogs, foxes, and skunks. Care should be taken to latch the shelter door each night after all birds are inside.

DUCKS AND GEESE

One advantage in raising ducks or geese is that they generally require less care and attention than the same number of chickens.

For example, young geese can be put on pasture when they are only a few weeks old. They will need little additional food as long as the grass is green.

Anyone planning to keep waterfowl should obtain additional information on breeds, feeding, management, and care from his county agricultural agent or from the U.S. Department of Agriculture.

SQUABS

Squabs are young pigeons 25 to 30 days of age. Squabs for the family table or market can often be raised successfully on small farms not suited to chicken raising.

If you plan to market squabs, first investigate the local market. Squabs usually bring good prices, but the demand for them is more limited than the demand for chickens and eggs.

Pigeons can be raised in simple, inexpensive houses or in an unused part of a barn or shed. Adult birds feed their young on a substance called pigeon's milk, which is produced in the adult birds' crops.

Each pair of breeders will produce 10 to 14 squabs in a year.

Breeds recommended for producing early-maturing squabs of high market value are: King, Carneau, Mondaine, and Giant Homer. Squabs of these breeds should weigh 14 to 24 ounces—a desirable weight and size for an individual serving.

DAIRY COWS

The small-tract farmer often wants to keep a dairy cow to furnish milk, cream, and butter for the family.

Owning and keeping a cow on a limited acreage is praticable if—

- Ample pasture and hay are available.
- Breeding service is offered in the community.
- A comfortable, sanitary cow shelter can be provided.
- Someone in the family has the time and can be on hand every day to feed, water, and milk the cow.
- The family can make use of the milk produced.

A grade cow, well fed and well cared for, produces enough milk to more than pay for her feed, even if all feed is purchased. She will produce 3,000 to 6,000 quarts of milk per year—more than enough for a family of two adults and three children.

Any savings in family food bills, however, should be figured

against the cost of buying and feeding a cow. Some large families may want a cow to provide an abundance of milk and milk products.

A cow will eat 20 to 25 pounds of hay a day, or 3 to 4 tons a year, if no pasture is available. In addition she will need 1 to 2 tons of a concentrate grain mix.

Hay cost varies greatly over the country, but usually runs from $40 to $80 a ton. The price of concentrates depends on the protein content and may range from $80 to $130 a ton. From 800 to 1,600 pounds of straw are needed for adequate bedding. The average cost of feeding and bedding a cow for a year would be $150 to $350.

If part or all of the feed can be grown on the farm, the cost of keeping a cow will be reduced proportionately. Generally, 2 acres of good land will provide most of the feed (mainly pasture) for 6 months of the year, and cut feed costs almost in half.

Buying a Cow

Select a cow from one of the five principal dairy breeds—Ayrshire, Brown Swiss, Guernsey, Holstein-Friesian, or Jersey.

Jerseys and Guernseys are often used for family cows because they are smaller and do not require as much feed or give as much milk as some of the larger breeds, such as Holstein-Friesian or Brown Swiss. Moreover, the milk of Jerseys and Guernseys is higher in butterfat than that of some of the other breeds.

A cow that is 4 or 5 years old and has had her second or third calf is generally a good choice. She will be young enough to have years of production ahead of her, and old enough to have shown her milk-producing ability.

Unless you can use or market a large amount of milk, there is no reason to pay the high price asked for a heavy milk producer.

The cow you select for family use should be—

- Sound and healthy.
- Easy to milk.
- Gentle, free of bad habits.

Examine the cow's udder. It should contain no lumps or hardened tissue, and should have good-sized teats. A large udder does not necessarily mean high milk production; avoid large, meaty udders that do not shrink after milking.

See the cow milked by hand, or better still, milk her yourself a few times. Examine the milk for clots, flakes, strings, or blood. To do this, draw several streams of the first milk from each teat on a close-woven black cloth stretched over a tin cup or into a "strip cup" especially designed for examining milk.

Do not buy a cow that kicks, or one that wears a yoke, muzzle, or nosepiece. Such devices indicate that the cow has bad habits, such as breaking through fences or self-sucking.

Be sure any cow you buy is free from tuberculosis, brucellosis, and leptispirosis. These diseases can be transmitted to man. Make sure the cow has been tested for these diseases by a veterinarian within 30 days of the time you complete the sale.

Feeding Practices

Summer feeding

If possible, use approximately 2 acres of the farm for pasture to provide summer grazing for the cow.

Permanent pastures of bluegrass or mixtures of grass drop in production in the summer and may have to be supplemented to provide a uniform feed supply.

In most of the States across the northern half of the country, alfalfa and ladino clover mixed with grasses produce well during the summer but have to be reseeded every 3 to 5 years.

Sudangrass and crosses of sudangrass and sorghum or soybeans make excellent summer pasture in the North. A half acre of this temporary pasture may be planted next to permanent pasture. This provides temporary grazing for the cow and the excess may be cut and thrown into the permanent pasture for feed.

CAUTION: *Do not allow cows to eat sudan during its early growth or its regrowth after drought or frost. Sudangrass in these stages may cause prussic acid poisoning.*

Do not graze sudan until it is 18 inches high, or cut it for hay until 2 feet high. Tall, yellowish-green sudan is relatively safe, but short dark-green sudan is likely to be dangerous.

In the South, Coastal bermudagrass, pearl millet, carpetgrass, dallisgrass, and lespedeza make good summer pasture but do not come on early in the spring. In this region part of the pasture should be planted to crimson clover or small grains, such as oats, rye, barley, or wheat, in the late summer or early fall. This will provide some forage for winter and late spring.

A vegetable garden can furnish a little summer feed. Cows will eat pea vines, sweet cornstalks, cabbage leaves, and sweetpotato vines.

Winter feeding

The family cow's winter feed consists of hay and a mixture of concentrates. Alfalfa, soybean, alsike clover, or early-cut grass hay are satisfactory. A Jersey or Guernsey cow will need at least 20 pounds of hay a day, and a pound of grain for each 2 to 4 pounds of milk she produces.

LA-D7-2

FIGURE 5.—Young Guernsey cow grazing on improved pasture of clover and dallisgrass.

A mixture of ground corn and wheat bran is a good concentrate to feed with hay. Some soybean oil meal or linseed oil meal may be added to the diet of hay and grain for extra protein. Or you can buy a reliable ready-mixed feed made for milk cows.

The proportions of hay and concentrate may be adjusted. How this is done depends on the cost of the feeds in your area and how much milk the cow is giving. Sixty-four pounds of concentrate furnish approximately as much nutritive value as 100 pounds of hay.

Provide a block of trace mineralized salt in a sheltered box for the cow, or add loose salt to her concentrate mix at the rate of 1 pound to every 100 pounds of feed.

Water the cow at least twice daily in winter and more often in summer.

Housing

The family cow needs a sunny, comfortable shelter or stable. She may be left untied in a box stall about 10 feet square, or confined to a smaller space and held with a stanchion, chain, rope, or strap.

The cow has more freedom but needs about three times as much bedding in a box stall than when she is confined in a smaller space.

If a cow is confined with a stanchion, there should be a manager in front, extending beyond the stall, and a gutter for droppings behind the cow. Allow 4 or 5 feet of space behind the gutter to make it easy for the cow to get into the stall, and to facilitate removal of manure. If possible, have enough space in front of the manger to permit feeding from the front so feed will not have to be carried in from the rear.

If the cow is confined by a stanchion, the sides of the stable should be constructed to prevent drafts in cold weather. This is not so important if she is kept in a box stall. Except in very cold climates, the box stall can be open on the south side, if the other three sides are tight. An arrangement that permits the sun to shine into the box stall in winter adds to the cow's comfort. A stall that is entirely enclosed should be ventilated by a tilting window on the side opposite to the prevailing winter winds.

Care of the Cow

Always handle a cow gently and quietly. See that all fences are well constructed so the cow will not develop a habit of breaking through. A fence made of four barbed wires, tightly stretched and fastened to good posts, will keep most cows in a lot.

Brush the cow daily. Do not allow manure to cake on her flanks and thighs. Regular grooming is especially important if she is confined in a stall.

Cows are usually milked twice a day. Before you milk, be sure that the udder and flanks of the cow are free of dirt that might drop into the milk pail. Wash any soiled parts thoroughly. Always wipe the udder and flanks of the cow with a clean, damp cloth before you milk, and be sure your hands are clean and dry. Use a small-top pail and milk with both hands, drawing the milk quickly with as little discomfort to the cow as possible. Keep your fingernails short. Do not insert milk tubes or straws into the teats.

Consult your county agricultural agent about breeding service in your area. Artificial insemination will probably be available. Cows are usually bred to calve

and freshen at about 12-month intervals. It is a good idea for the cow to be dry for a month or 6 weeks before she calves again. This results in greater milk production. Cows can be made to go dry by reducing their feed and gradually discontinuing milking.

Cows usually do not have much difficulty at calving time, but progress of labor should be checked frequently. If difficult labor is prolonged for several hours, a veterinarian should be called. In cold weather the cow needs a warm stall and plenty of bedding at calving time.

You may want to sell the calf or keep a heifer calf for future milking. Newly born calves of the dairy breeds bring $30 to $50, the amount depending on their size and the current market price. At 2 or 3 months, a fattened calf should bring considerably more. If your family does not need all the milk the fresh cow produces, the surplus can be fed to the calf.

Care of the Milk

As soon as the milk is drawn, strain it through a clean cloth. Single-use strainer cloths are best. If cloths are to be reused, wash and boil them after each use. All raw milk should be pasteurized by heating it to 142°F. and holding it at that temperature for 30 minutes, or by heating it to 161° and holding it for 15 seconds.

After milk is pasteurized, cool it as rapidly as possible to 50°F. or lower. Keep it in the refrigerator until you are ready to use it. Whole milk not needed for immediate use may be held for buttermaking. Keep milk in a deep container until the cream rises to the top. After about 24 hours, skim off the cream for churning. The skim milk may be used on the table, for cooking, or for making cottage cheese.

Rinse all milk utensils in cold water immediately after use. As soon as possible, wash them in hot water containing a dairy washing powder or detergent. Scrub with a brush. Rinse utensils with hot water, then scald them with boiling water.

Keep sanitized utensils in a clean, airy place, uncovered. Milk pails and other utensils should be seamless so there will be no crevices in which milk can lodge.

Making Butter at Home

High-quality butter may be made at home from sweet or slightly sour cream. Butter made from cream that is too sour has a

S-12594

FIGURE 6.—A glass hand churn with wooden paddles for making small quantities of butter.

strong flavor and does not keep well.

You will probably want to save the cream skimmings for 3 to 4 days before churning.

Churning uses mechanical means to pound, dash, or beat the cream until the minute globules of butterfat in the cream stick together and form butter granules.

Probably the best kind of churn for making small quantities of butter is a 1-gallon glass churn equipped with wooden paddles. Fill the churn only one-third to one-half full. Churning incorporates air into the cream and causes it to increase in volume. After you have churned for 30 to 40 minutes, butter granules should form.

Butter granules form best when the cream is at a temperature of 54° to 58°F. in summer and 58° to 64° in winter.

Stop churning when the butter granules are about the size of kernels of corn. Remove the granules of butter from the buttermilk and wash them with water about the temperature of the buttermilk or a little cooler. Drain the water off, add salt at the rate of 1 tablespoon to each pound of butter, then work the butter with a paddle until the salt is evenly distributed and buttermilk extracted.

DAIRY GOATS

The small family may find it more convenient and economical to milk one or two goats than to buy milk or keep a dairy cow. Goat's milk can often be tolerated by infants and invalids who are allergic to other milk.

A good dairy goat produces at least 2 quarts of milk daily for 8 to 10 months of the year, and can be fed for about one-sixth of the cost of feeding a cow.

A dairy goat costs $75 to $100, the amount depending on her breed and production record. Be sure that any goats you purchase are from a tuberculosis-free and brucellosis-free herd.

Feeding

Feed goats producing milk all the clover, alfalfa, or mixed hay they will eat, and any available root crops, such as turnips, carrots, beets, or parsnips. Good quality silage can be substituted for root crops.

If a goat giving milk is not on pasture, a good daily winter ration would be: good alfalfa or clover hay, 2 pounds; root crops or silage, 1½ pounds; concentrates, 1 or 2 pounds. Concentrate mixtures should consist of oats, bran, and linseed oil or other protein supplement.

Goats on pasture need slightly less grain or concentrates.

Pregnant does should be fed all the roughage they will eat in fall or early winter, along with 1 pound of root crops or silage, and ½ or 1 pound of the same grain mixture fed to goats in milk.

Any strongly flavored feeds, such as turnips and silage, should be fed after milking so the milk will not be affected by off-flavors.

Keep rock salt before goats at all times and occasionally mix a small quantity of fine salt with the grain mixture. No other minerals are necessary if legume hay is fed. If nonlegume hay is used, calcium and phosphorus supplements will be needed. See that goats have access to plenty of fresh water at all times.

Care of Dairy Goats

Goats do not need any special kind of housing, but should be

protected from rain, snow, and cold. They are natural climbers and, unless tethered, will climb on low buildings and machinery around the farmstead.

Cleanliness is essential in handling and feeding dairy goats. Does kept in sanitary surroundings do not have objectionable odor. Bucks, the principal offenders, need not be kept if breeding service is available in your area.

Milking

A milking stand built with a stanchion at one end and a seat for the milker at one side is a real convenience in milking a goat. Such a stand can be constructed at little cost.

Young does usually object to being milked at first; a stanchion and stand help confine them. A little grain in the box attached to the stanchion helps quiet them. After a young goat is milked a few times in such a stand, she becomes accustomed to milking and will jump on the stand and put her head in the stanchion without assistance.

Heavy-producing does may need to be milked three times a day for a short time after freshening, but twice-a-day milking is usually often enough for grade does.

Breeding and reproduction

Does come in heat regularly between September and January. After this time, they usually cannot be bred again until late in August. They stay in heat 1 to 2 days. The period between heats

BN-26562

FIGURE 7.—The most convenient way to milk a dairy goat is from a milking stand as shown here. Note the stanchion and feedbox in front.

is generally about 21 days. Gestation averages 149 days, or about 5 months. Does usually give birth to two kids, but occasionally may have three or even four offspring at one kidding.

If your family needs the milk and the farm produces only limited green feed, you will probably want to dispose of the kids. Kids are not hard to raise, however. They can be fed goat's or cow's milk in a bottle until they learn to drink from a pan, pail, or trough.

A good goat will give milk for 8 to 10 months after freshening. One that gives milk for less than 6 months should not be kept.

SHEEP

Sheep raising does not involve expensive equipment or heavy labor, but it does take sufficient pasture and excellent fences—requirements that the small-farm operator may not be able to meet.

There should be enough pasture to feed the sheep in spring, summer and fall, and still allow for frequent rotations to clean ground or for separation of lambs from ewes. Rotation helps protect sheep from internal parasites (stomach worms) that can cause serious losses. Two acres of good pasture will provide feed for three to eight ewes for the summer months.

All pastures should be enclosed with a dogproof fence. Such a fence combines woven and barbed wire and is 56 to 58 inches high. It has a strand of tightly stretched barbed wire close to the ground. Above this is a 36-inch woven wire fencing with a 4-inch mesh, and above this are two strands of barbed wire.

The number of sheep you can care for properly on a limited acreage will depend largely then on how much well-fenced pasture you can provide.

Do not get into sheep raising with the idea that sheep require little or no attention. Their needs are varied, and their habits are different from those of other farm animals. Ewes and lambs may require special care at lambing time.

Selection of Sheep

The beginner in sheep raising will probably find it best to choose one of the dual-purpose breeds that satisfactorily combines wool and lamb producing ability. You may want to consult you county agricultural agent or State extension livestock specialist for help in selecting a breed adapted to your locality.

Pure breeding or registry is not always synonymous with quality, merit, or productivity, and you will probably decide that good quality grade sheep will be satisfactory. If you plan to sell rams for breeding purposes, however, you will want to start with purebred sheep.

If you can use a ram from a local breeding service, you can start with only ewes. If such a service is not available, you may want to buy a small flock of ewes and one ram.

Buy young ewes, and breed them to give birth to their first lambs at about 2 years of age. The gestation period is about 145 days. Ewes usually come in heat in the late summer or fall. It is good to breed them as early as possible so that lambs will be born in the winter months. Cold weather discourages parasites, which may be a problem with lambs born in spring or summer.

Late summer or early fall is the best time to go into sheep

raising. Desirable ewes are more likely to be available for purchase then, and they can be put on pasture or late forage for a while before breeding.

Feeding and Care

Sheep on good pasture do not need grain. If sheep on pasture lose weight or show other signs of poor condition, it generally means that the pasture is inadequate and that some grain should be added to their diets.

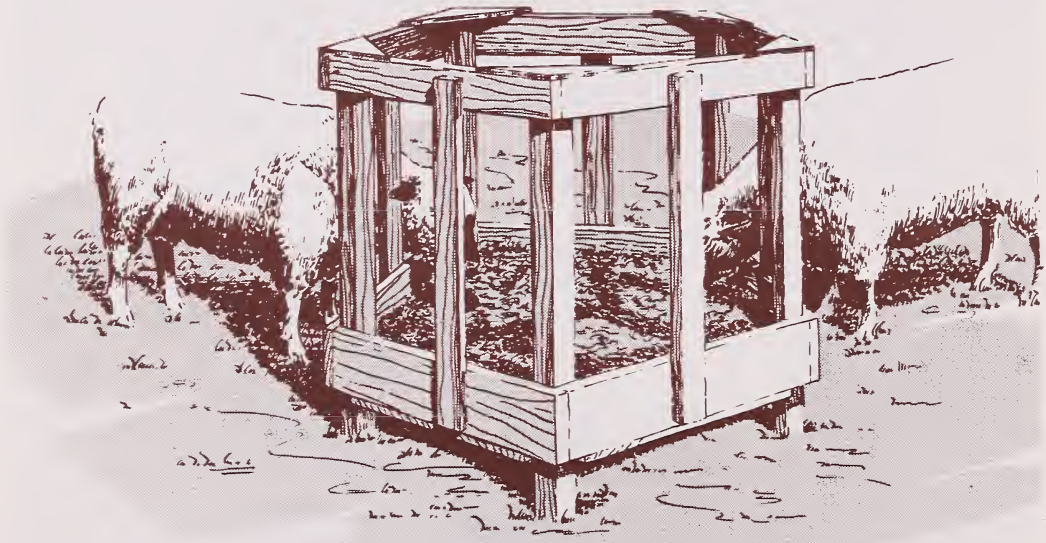
In the winter when no pasture is available, sheep should be fed a ration of good-quality legume hay, preferably alfalfa. Three to four pounds of alfalfa hay a day is sufficient for ewe weighing less than 150 pounds. About a month before ewes are to lamb, supplement the hay with ½ to ¾ pound of grain a day. Salt and fresh water should be kept available at all times.

Lambs should be taught to eat as soon as possible; they will begin to nibble at feed when 10 to 16 days of age. If you like, you can fix up a small pen or creep to hold the lambs' feeding troughs. Upright slats, about 3 feet high and placed 9 to 12 inches apart, will let the lambs in and keep the ewes out.

Lambs can be fed ground grain from a creep as soon as they start to eat until they are weaned or marketed—at about 120 days of age or 70 to 90 pounds in weight.

Sheep need no special kind of housing. A closed barn or shed should be available for bad weather and at lambing time. Small lambs and their mothers should be kept separated from the rest of the flock in a closed shelter.

Sheep are sheared in the spring



BN-26763

FIGURE 8.—Hay and grain feeder for 10 sheep. This five-sided feeder prevents crowding and waste. Although this feeder is portable, it is not easily overturned. Working drawings for building this feeder may be obtained through your county agricultural agent.

N-25090

FIGURE 9.—Sheep are usually sheared in the spring after cold wet weather has passed. A good shearer takes all of the wool from a sheep in one piece.

or early summer, either before or after lambing. The owner of a small flock will probably find it best to get a custom shearer if one is available in the locality. If you wish to do the shearing yourself, hand-power shears can be purchased. Other equipment that may be needed includes tools for castrating and docking (removal of lambs' tails, which is done when they are 7 to 14 days old) and scales for weighing lambs and fleeces.

Equipment need not be expensive; probably the greatest expense to the beginning sheep raiser is the fencing necessary to keep out predatory dogs and to make pasture rotation possible.

For further information on raising sheep, contact your county agricultural agent or the U.S. Department of Agriculture. Also, there are several good books on the subject that may be available in your public library.

RABBITS

Domestic rabbits can often be raised by small-farm operators and suburbanites if there are no community regulations that restrict such an enterprise. The cash outlay for stock, housing, and equipment is modest.

Rabbit meat is all-white, fine grained, and high in protein. Only about 20 percent of the dressed carcass is bone, so that meat yield is high compared with that of many meat animals.

In addition to raising rabbits

11327-A

FIGURE 10.—Champagne d'Argent, a medium-weight breed produced for meat. Mature rabbits weigh 9 to 12 pounds. Underfur is dark slate blue; surface fur appears silvery.

for the home meat supply, you may want to find out whether there is a market in your locality for rabbits as meat, or if they are needed as laboratory animals.

All rabbit skins have some market value, especially those from white rabbits, because they can be dyed any color.

Selecting Stock

You may either buy young rabbits just weaned, or a few animals about ready for breeding. Young rabbits cost less, but you will have a waiting period until the does are ready to breed at 5 or 6 months of age.

Medium and heavy breeds of rabbits are best suited for home and commercial production of meat. Popular breeds include: New Zealand, American, Bevern, Champagne d'Argent, Chinchilla, and Flemish Giants.

Obtain starting stock from a reliable breeder who will guarantee the stock to be healthy and productive.

The gestation period of rabbits is short—only 31 days. A good doe usually raises 6 to 8 young in a litter. She can be bred again when the young rabbits are 5 to 6 weeks of age. This makes it possible for her to produce four or five litters a year.

Young rabbits of the medium breeds are ready to eat or market when they are weaned at 2 months and weigh about 4 pounds. Thus a good doe can be expected to produce more than 100 pounds of marketable rabbits each year.

Feeding Practices

Following is a satisfactory ration for does suckling young:

	Percent of ration
Protein supplement	20
Grain	39.5
Roughage	40
Salt	.5

Dry does, bucks, and young rabbits do well on the following ration:

	Percent of ration
Protein supplement	8
Grain	31.5
Roughage	60
Salt	.5

Dry does, bucks, and young rabbits also may be maintained on alfalfa hay alone, or hay plus a few ounces of grain daily.

A number of ingredients or

80239-B

FIGURE 11.—New Zealand, a popular meat rabbit, usually marketed at fryer weight (4 to 6 pounds). Body color may be white, red, or black.

11386-D

FIGURE 12.—Flemish Giant, a large breed of rabbit. Mature animals weigh 13 to 16 pounds. Varieties differ in color—steel gray, light gray, sandy, blue, white, or fawn.

combinations of ingredients can be used to meet these nutritive requirements. Linseed meal, soybean meal, or peanut meal can be used for the protein. The grain portion can include corn, oats, barley, wheat, or milo. Alfalfa or clover, or other good-quality hay, is recommended for roughage.

Salt may be added to other feeds, or a small piece of compressed salt may be provided for rabbits to lick.

Many rabbit growers prefer to buy a pellet feed—especially prepared for rabbits—that contains all necessary nutrients and saves the labor of mixing feeds.

Whether the grower uses a pelleted feed or mixes the ration himself, it is important to regulate the feed intake to prevent the rabbits from becoming too fat.

About 400 pounds of grain and other concentrates are required to feed an average-sized doe and her four litters to the age of 8 weeks.

Small amounts of green feed—freshly cut grass, clover, or garden crops—may be added to the diet. Be sure that garden crops and grasses have not been sprayed with or exposed to insecticides.

Housing

Rabbits are usually kept in hutches about 2 feet high, no more than 2½ feet deep, and 3 or 4 feet long. These can be made at home inexpensively. Hutch con-

83091-B

FIGURE 13.—An inexpensive hutch suitable for small rabbitries. It is light in weight and can be moved from place to place. Hay is kept in the manger between the two compartments.

struction varies from all-wire quonset-shaped hutches for use inside buldings to partially enclosed hutches for use outdoors.

Several types of flooring can be used in building hutches. Wire mesh floorings is used extensively where self-cleaning hutches are desirable. Solid and slat flooring, or a combination of solid flooring at the front and a strip of wire mesh at the back, can also be used.

In areas where the climate is mild, hutches can be placed outdoors in the shade of trees or buildings, or they can be placed under super-structures for protection from sun and rain. Sunlight is not necessary for rabbits. During hot weather some cooling measures must be provided in addition to shade. If buildings are used they should be adequately ventilated.

HOGS

Ordinarily, hogs are not recommended for the small or part-time farm operation because the acreage is not large enough to raise the necessary feeds. Also, some communities have ordinances that prohibit the keeping of hogs. Investigate local restrictions before you buy stock.

If you can raise pigs chiefly on surplus garden produce, without the need to buy much feed, it may be profitable to raise one or two for the family meat supply. If you have to rely on feeds bought at retail prices, the enterprise is likely to be impractical.

BN-26762

FIGURE 14.—This meat-type gilt will produce pork with more lean and less fat and lard than that produced by an ordinary fat hog.

Buying Hogs

The best time to buy pigs is in the spring when they are being weaned. Be sure that any pig you buy has been raised on clean ground under a strict system of sanitation. A pig weaned at 8 weeks of age should weigh at least 35 pounds, and should have a thrifty, clean, and alert appearance.

Choose a female pig, or a male pig that has been castrated (a barrow). A male pig that has not been castrated will produce meat with an undesirable odor and flavor.

Feeding Practices

A hog eats about 600 pounds of feed from a weaning age of 8 weeks to a finished weight of about 200 pounds. The feed should consist of grains, a protein supplement, and a mineral supplement.

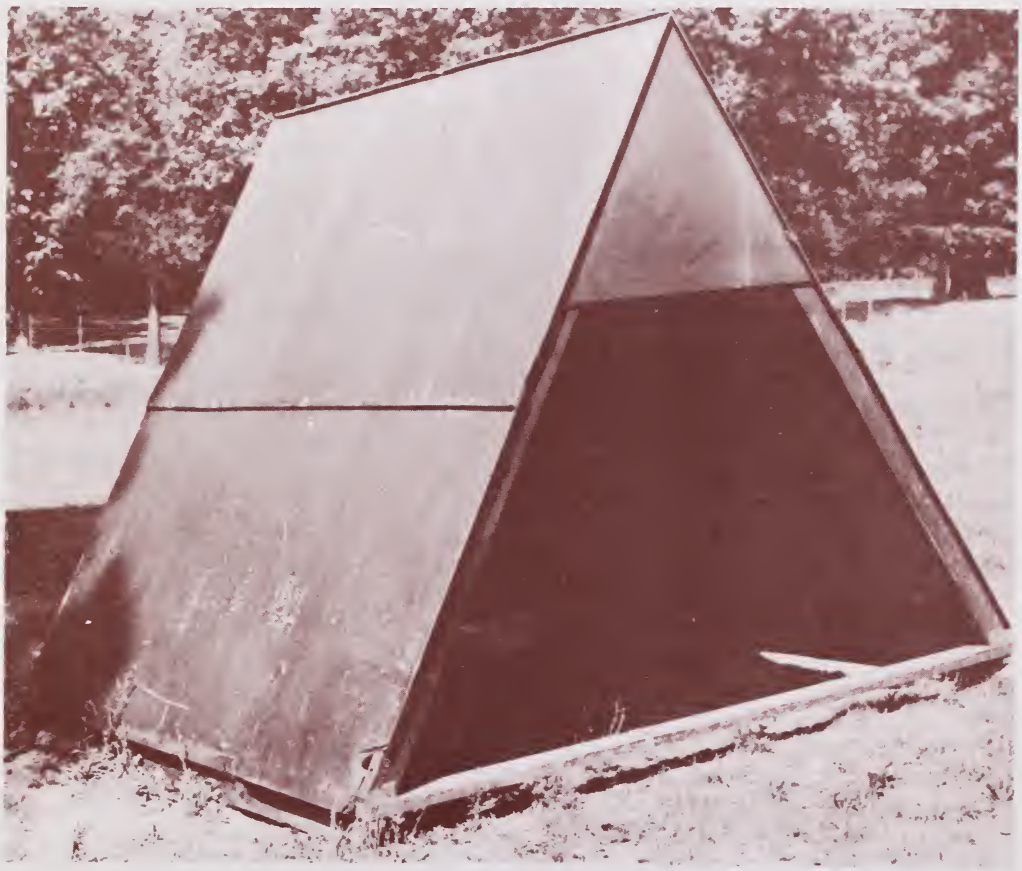
Yellow corn is the standard grain; however, barley, wheat, or grain sorghums can also be used. Soybean meal is a very satisfactory protein supplement. The grain and protein supplements should be mixed so that the ration contains about 16-percent pro-

tein. A good mineral mixture consists of equal parts of steamed bonemeal, ground limestone or airslaked lime, and common salt. This should be kept in a self-feeder where it is available at all times. In addition, keep an ample supply of fresh drinking water before hogs.

If hogs have access to good pasture, they will thrive on 10 to 15 percent less feed. In the northern half of the United States, the following crops make good pasture for hogs: alfalfa, ladino, red clover, alsike, white clover, bluegrass, burclover, timothy, and combinations of these. In the South, bermudagrass, lespedeza, carpetgrass, crabgrass, and dallisgrass are preferred for hog pasture. Temporary pasture—rye, oats, wheat, rape, soybeans, and cowpeas—can be sown in the hog lot.

Housing

Any simple shelter that provides protection from drafts, snow, and rain, gives shade in hot weather, and has a dry floor can be used for hogs. Locate the pen at least 500 feet from any dwelling house to prevent annoyance from odors.



ST-481-22

FIGURE 15.—An inexpensive A-frame hoghouse made with 2- by 4-inch boards and exterior plywood. This portable shelter is big enough for three or four market-sized hogs. A wooden floor can be set in for warmth.

ADDITIONAL INFORMATION

The U.S. Department of Agriculture has a number of publications containing additional information on the subjects presented in this bulletin. *Ask your county agricultural agent for free copies of any leaflets or bulletins that will help you.*

Single copies of the publications listed below can be obtained by sending a post card to the Office of Communication, U.S. Department of Agriculture, Washington, D.C. 20250. Be sure to include your name, address, ZIP code, and the title and number of the publications.

	Order Number
Facts About Pasturization of Milk	**L 408**
Keeping a Cow	**L 536**
Breeds of Swine	**F 1263**
Raising Ducks	**F 2215**

Reviewed by

Clair E. Terrill, ARS staff scientist,
Livestock and Veterinary Sciences,
Beltsville Agricultural Research Center–West,
Beltsville, Md. 20705.

U. S. GOVERNMENT PRINTING OFFICE : 1977 O - 246-104